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of two and a half hours, offers the most magnificent appearance in respect of this sort of cultivation. Such is also the case at *Bsherreh*, which lies on the northern side of *Wady Kadisheh*, at the same elevation, and opposite to *Hasroun*.

I extract the following notes from a description of an excursion I made in 1843 across the northern Lebanon :—

	<i>Paris feet.</i>
<i>Shumlan</i> (starting point)	1874
Pass over the crest to <i>Zahleh</i>	4923
Natural bridge, source of <i>Nahr el Kelb</i>	4622
Source of <i>Nahr Ibrahim</i>	5604
<i>Hasroun</i>	4966
Cedars	5535
<i>Ainata</i> (on the declivity toward Baalbek)	4656
<i>Baalbek</i>	3332
Pass over the Lebanon, on the road from Beyruth to Damascus	4550

These measurements were made with the barometer, and from corresponding observations taken at Beyruth. *All* the measurements by barometer gave a *smaller* result than those which I subsequently had occasion to make with the hypsometer of Ekling. This difference is very considerable with regard to the pass over the Lebanon between Beyruth and Damascus. The measurement by means of the hypsometer (though, it is true, under unfavourable circumstances) gave for this pass (*Mughissah*) 5013 feet. Which is right?

I subjoin my section of the country between Beyruth and Damascus. The number of the 'Annals' * in which it is published contains, among others, the following remarks in this essay.

The heights were determined in 1846 by means of two hypsometers, which were constructed at Vienna by Ekling, under the direction of Professor Baumgärtner, and they had been made in accordance with directions given in the Introduction to Professor Gintes' work 'On Measuring Heights,' and expressed in *Paris feet*. One of these instruments was observed five times in the day by Mr. Blanche, tutor in the house of the French Consul-General at Beyruth.

Khan Rouiessat el hamr (khan of the red cupolas) was fixed barometrically in 1843 at 3616 feet; *Khan Murad*, at the same time, at 4000 feet. With regard to the highest point of the road across the Lebanon, I refer to my former observation. A violent and cold wind caused a continual vibration of the column of quicksilver in my thermometer. From the village *Medjel* to the mill at Barrada there is no inhabited place.

XVI.—Notes on the Present State of the Geography of some Parts of Africa. By JAMES MACQUEEN, Esq.

(Read April 8 and June 10, 1850.)

IN accordance with the desire of the President, I proceed to lay before the Society, as concisely as possible, a summary of the Geography of Central Africa, several degrees to the north and to the south of the equator towards the Indian Ocean. I shall commence with the lake to the N. of the tropic of Capricorn, and

* Monatsberichte der Gesellschaft für Erdkunde zu Berlin, Neue Folge, 4 Band, 1847.

the countries, rivers, &c. to the S. and to the E. of it, as these have been brought before us more prominently by the late journeys of Messrs. Livingston, Oswell, and Murray.

With Mr. Oswell I had considerable communication before he left England, and received from him and from Captain Vardon, his fellow traveller, much information concerning the parts which they had visited but a short time before. The pleasure of their acquaintance I owe to my late lamented friend, Sir William Harris, whose introduction was sufficient to assure me that they were men of energy and intelligence. On Mr. Oswell's leaving England I drew up for him a map, to serve as a guide, or to be corrected by him during his hazardous enterprise. The *Lake* was placed on the map exactly as it now stands.*

The Limpopo and its tributary streams terminate in the Indian Ocean, probably to the S. of Chulawan and Holy Islands. When Mr. Moffatt, on his late visit to Moselakatse, was on the banks of the Limpopo, he fell in with a man of the Baquiana tribe, who had been the guide of Dr. Cowan and his colleagues in their journey from the Cape of Good Hope through the interior, towards the Portuguese settlements on the E. coast, and who conducted them from his country in a N. E. direction until they had crossed a large river which runs eastward to the Indian Ocean, where he left them; they intending to proceed down its banks, and thence to Sofala. This is important, as Captain Owen was informed at Sofala that the travellers alluded to had been murdered about twelve days' journey in the interior. Captain William Cook was informed at Quilimane, by a man who had travelled much into the interior to the S.W., that such was really the fate of the unfortunate travellers. They had formed a kind of stockade, in order to defend themselves against the attacks of a formidable body of natives, but in which they were overpowered and massacred. These facts leave little doubt as to the fate of these unfortunate travellers; the part of the country in which it took place, and also that the course of the river Limpopo and its tributaries is to the Indian Ocean at the point mentioned, even did not the Delta and streams which, through it, enter the sea at that place—in my opinion establish the fact.

The Bamangwata tribe is noted above the others for industry and wealth. Considerably to the N. of them is a tribe named Bamagalalabili; and beyond them, to the N.E., is found a people half white—the real Zooloos—or, probably, the descendants of

* For an account of the lake and the surrounding country, I must refer to my paper read before this Society in the Spring of 1845, and published in September the same year, in the 'Colonial Magazine.' See also the 'Journal of the Royal Geographical Society,' No. I. of Vol. XX. for the expedition to the lake, by Messrs. Livingston, Oswell, and Murray, with Map by Arrowsmith.

some of the early Portuguese settlers from the shores of the Indian Ocean. All the countries to the N. and the E. of the Baquiana tribe are said to abound in rivers, and to be hilly, woody, populous, and fruitful.

It is a proof of their general accuracy, that the early Portuguese African discoverers pointedly mentioned a large lake in the interior, in a direction nearly W. from Sofala, and at a distance from the sea (60 days) corresponding with the position of the Lake Mokoro.*

Several particulars of interest appeared in the South African Journals in 1845, on Mr. Livingston's authority; such as, "that to the N.E. of the lake the country became very mountainous, and was inhabited by a tribe called Maahana, who purchased guns from the Portuguese traders at Sofala through the medium of the Motaquare traders."†

Mr. Livingston, at the time of his first journey, resided at Mobatse, and travelled from this N.E. by Sechele. He now resides at Kolobeng, in $24^{\circ} 50'$ S. lat., and $25^{\circ} 10'$ E. long., from which place he states, in a letter to Mr. Oswell, that the lake bore N.N.W.; that is, considering the bearing to be by compass, and the variation two points about due N. The Bamangwata tribe reside N.E. from Kolobeng, about 16 miles W. of the Bakaas.

According to Mr. Oswell's first journey the Bakaa hills were, by actual observation, in $21^{\circ} 45'$ S. lat. Protracting carefully the routes in bearings and distances from Mabatse, the E. end of the Bakaa hills lies in $27^{\circ} 40'$ E. long. From this point the lake bore N.W., distant about 12 days' journey on foot, 24 days by waggon—say, 200 miles. The country from Mobatse to the N. was first very rugged and mountainous, then flat and barren, scantily supplied with water, and in several places exhibiting remains of volcanic craters. At Lupapi a fine sheet of water in a depressed volcanic basin was found.

The Bakaa hills rise from about 200 to 300 feet above the adjacent country. There are many cornfields amongst them. The air is very pure and wholesome, and, at the time they were there (the end of June), the cold at night was so severe that it froze the water to a solid mass, which for that latitude, even although it was the winter season, proves a considerable elevation.

Traversing the Bakaa hills to the W., Mr. Oswell and party turned S.E., and descended on the second day to the Limpopo,

* In my 'Geographical Survey of Africa,' No. XVIII., p. 264, the centre of this lake was placed at 20° S. lat., and about $23\frac{1}{2}^{\circ}$ E. long., the starting point Latakoo being taken 2° too much to the west. Lake Demboa in S. lat. 19° and E. long. 19° .

† Mr. Parker told me that he had visited the lake at a later period, and gave me his route (N.W.) and time from Delagoa Bay. He stated that it received a river on the S.W., and that, according to native information, one ran from it to the N.E.

which they crossed and travelled near the stream on its right bank a considerable distance to the eastward, passing in their route first the river Mikolwe from the S.E., which, at its junction with the Limpopo, is 150 yards broad. They re-crossed the Limpopo a few miles from Lingwapa,* near the junction of the Liphhalala, another considerable stream coming from the S.E. Below that, and more to the E., the Limpopo is joined from the S. by another stream, called the Moholoquane, said to be connected with the Elephant river.

On the N. side, and above Lingwapa, the Limpopo is joined by several small rivers, one of which, to the N. of the Bakaa mountains, called the Matokesane, is the largest, and flows into the Limpopo a little above its junction with the Mikolwe. Where the travellers crossed the Limpopo, near Lingwapa, it was about 250 yards broad, above 4 feet deep, and with a considerable current. This was during the *dry* season. The banks were 20 feet high, steep, with indications that when in flood the river filled them, but without overflowing. Near this place there is a small conical hill about 500 feet high, from the top of which the Limpopo can be seen bending its course towards the E.N.E. From Lingwapa the Limpopo is joined by several small rivers from the N.W., while the Shazie, or Shazanie, 60 miles from Lingwapa, was described by the natives as a *large* river flowing from the lake.† Eastward of Lingwapa the country is generally flat on the *north* side of the river, with a few conical low hills; and on the *south* side of the river the country is populous, hilly, and thickly wooded. Below the Mikolwe the banks are infested with the fly (Setsé), which is most destructive to cattle and horses. It seems to be of the same description of insects as those which Bruce tells us infest the country to the N. of the junction of the Blue and the White Nile at the commencement of the rainy season.

Leaving here the Limpopo, or, as it ought more properly to be called, the Ouri or Oori, in about 22° S. lat. and 30° 30' E. long., pursuing its course in an E.N.E. direction, let us turn to the map, where we find to the southward of Chulawan, or Holy Islands, between 21° and 21° 31' S. lat., a low *delta*, intersected with several streams, all of which were reported to Owen to come from one great river in the interior. Of these streams the Govooro was the largest. It was, says Owen, small at its mouth, but a superb river in the interior. South of it is the *Moronome*, also a stream of considerable magnitude. In this part the mountains are at a

* In about 30° 30' E. long. and 22° S. lat.

† The rivers joining the Limpopo from the N. side to the E. of Lingwapa, are the Lotsane, the Lebetu, the Motuiste, or Macloueste, and the Shazie, or the Shazanie. Mr. Oswell was probably misinformed respecting the Shazie being the largest, and that it came from the lake.

considerable distance from the sea. The mouths of these streams are, like those of many other African rivers, blocked up by sand banks which the currents and terrible surfs roll in upon them. In this portion of the African coast I consider the mouth or mouths of the Limpopo or Oori to lie, and the name *Govooro* is to me a strong presumption in proof. From Lingwapa to this point is 240 geographical miles, almost in a direct line, and all accounts agree that the Oori in its lower course becomes a magnificent stream. The Dutch farmers or boers, who have spread over this portion of Africa a long way to the north, informed Mr. Livingston "that the Oori becomes a very large river, and that it does not go to Delagoa Bay, *but enters the sea by its own proper mouth and name a little to the north of that Bay.*" *

In lat. 24° 50' S. there is the mouth of the Rio Oro, Ouro, or Gold River of the Portuguese, which names identify this stream with the Oori, providing the Govooro is not the termination of this important stream. I cling at present to this opinion as it gives to that portion of Africa a more natural geographical appearance, and at the same time leaves sufficient space for the *Innham-bane* and other rivers which enter the Indian Ocean in that portion of Eastern Africa. Mr. Parker, who affirmed that he travelled from Delagoa Bay N.W. to the lake, told me that after passing the Liomba Mountains, he at the end of nine days found the rivers running to the N.E., which statement, if right, I conceive, settles the point, that the Great Lesuto and its tributaries form the parent stream of, or a large tributary to, the Manice or St. George River, which, be it recollected, Owen's surveying party left issuing from the mountains to the W. The Mapoota, the southern stream, is a small river (a mere mountain stream), and

* On the 7th September, 1844, Mr. Livingston writes Mr. Oswell (addressed to India) thus:—"The Limpopo runs and flows nearly E. after it goes beyond your farthest point in its course last year, as the boers (Dutch farmers) *saw it entering the sea a little to the N. of Delagoa Bay.* The country becomes densely wooded to the N.E., and filled with elephants."

On the 22nd March, 1847, Mr. Livingston again writes Mr. Oswell (addressed to India), accompanied by a rough delineation of the river, and two of its southern tributaries, the name of the one being the Lepinola (Liphalala), but the name of the other he had forgotten. The river, he says, receives, first the Lepinola, and then the other river; after which it makes a sweep away back to the N.E. The boers declare that it enters the sea a little to the N. of Delagoa Bay; that it becomes an immense stream—the mother of all rivers, after receiving the rivers mentioned.

On the 10th April, 1848, Mr. Livingston again writes Mr. Oswell (addressed to England) from Kolobeng, thus:—"I see no reason to dissent from the opinions, that the Limpopo goes so far N. (lat. Bakaa Mountain), but still it turns again more S., and then again to the N.E. There exists a range of very high hills N.E. of the Bamapele. I believe it quite possible that your nothing may be correct, by supposing that the river first makes a great bend S." He then adds, "I must now say a word on the course to the lake; the route is N.N.W. from this, and for a considerable part of the way, and waggons can go on till within eight days of the water," &c.

at the point where the explorers left it (62 miles from the sea), was stated to rise in the mountains about 20 miles distant to the S.W. or S.W. by S. These mountains are a continuation of the Liomba range, stretching S.W. till it joins the Drakenberg chain in about $27^{\circ} 30'$ S. lat. and 30° E. long. The Great Lesuto (before its junction with some of its tributaries), nearly equal to itself in size, divides into two channels, 25 yards broad each, very rapid, and scarcely fordable at some distance from Lotete, the capital.

E.N.E. of the lake the mountains are reported to be covered with snow, and the circumstance that the supplies to the lake come from the N. and N.W. is of great importance, as it discloses to our view the sources of the great streams which, with others coming from the central districts more to the N., form the great river, which enters the sea in $17^{\circ} 50'$ S. lat., and of which Nourse' river is probably a branch. The river alluded to is a very large stream, even during the dry season, much larger than the Orange river, where it enters the Atlantic. Mr. Cook, a Wesleyan missionary, states that round the sources of the Kuisip and Swakop rivers the cold is very severe, and that the E. wind is always most piercing and cold, proving that it must come from very high mountains. The earliest Portuguese navigators called the high mountain chain, which they were told existed in this portion of Africa, "the Mountains of the Moon," that is meaning simply exceeding high mountains.

Mr. Cook also says that northward and north eastward of the Damaras of the plains the country becomes well watered, populous, and abounding with cattle and provisions. Mr. Kolbe, another missionary, says, "the south part of the Damara country, near 22° S. lat., is mountainous, the northern part flat, with small hillocks covered with wild heath, grass, and bushes. The streams fail in the dry season, but numerous large trees grow and thrive on their banks, and move to the N. and the N.E. Other streams contain water throughout the year." The Damaras are a numerous race, and call themselves "Ovaherero;" they are tall and well made, and subsist chiefly upon their prodigious herds of cattle; in some cases 8000 belonging to one individual. To the N.E. dwell a people called Ovatjoane, akin to negroes, and to the north a people called "Ovampo." Their country is very fertile, and they live in towns and villages under a king, and practise agriculture. The Damaras understand the language of the latter. They are very careless of and cruel to their sick; practise circumcision, and follow the Eastern custom of taking off the sandal. They have a community of wives and also of goods—the Socialists in fact of S. Africa.

It has been again and again stated that the river Coanza takes

its rise in a lake. That able geographer, De Lisle, has a lake in about 15° S. lat. ; and Viscount Bandeira confirms this in a letter which I received from him some years ago. He states that a Portuguese gentleman, who had been in that portion of Africa, informed him that there was more than one lake furnishing supplies to that well known stream ; and he adds that he knew of no direct communication from Southern Benguela through the interior to Tete.

The rivers descending from the N.W. and the W. to the lake, coming, as they certainly do, from snow-clad mountains, prove first that, from their swollen state and great coldness, their respective courses must be short ; and secondly, preclude the possibility of the Zouga having any connection with the *Cuama*.

There is something unsatisfactory respecting the river Luaba and its connection with the river of Quillimane, and also the Zambezi. Starting at once from the river Quillimane, only a few yards broad, the Luaba is entered, a mighty stream about one mile broad, with a rapid current. We hear little or nothing more about it, and then find the Zambezi at Tete, while from Lacerda we learn that where the Zambezi passes through the Great Lupata chain, or, as it is called, "the *Spine of the World*," the stream, though doubtless very rapid, was yet so shallow that it would not admit the navigation of very light boats, which compelled Lacerda to travel by land until he got beyond the dreary passage. Can the Luaba be a stream coming from the S.W., and joined by the Zambezi below Sena ?*

It is remarkable that the generality of the tribes in this portion of Southern and Eastern Africa have traditions concerning the Flood, the Fall of Man, and his Expulsion from Paradise. One tribe, dwelling in the mountainous region to the W. of Séna, relate of the Creation and Fall of Man almost exactly the same as we do, but with the following addition—that the Deity placed a covered pot at the foot of the tree of knowledge, with the strictest injunctions not to open it. This was to be the test of their obedience or disobedience. After much doubt and delay, curiosity on the part of the woman got the better of her faith ; she accordingly opened it, when out sprang a rat, which sprang up the tree and ate the sacred fruit. The Deity, for this act of disobedience, expelled them from the Garden, and doomed them to wander into distant lands, and their children to be "*black and stupid*." They accordingly came into the land of the blacks (Africa), where a son and a daughter were born unto them, both black and ugly, which so horrified and disgusted them that they fled from their offspring into the land of the whites, where repenting, the Deity became reconciled to them, and blessed them with happiness, prosperity, and children.

* See Note at p. 251.

Quitting this portion of Africa, let us turn to the parts W. of Mombas, to the Great Lake in the interior, about 500 geographical miles distant, and the countries and rivers S. of Kaffa to the Bay of Formosa and Melinda. Besides the interesting communications of Messrs. Rebmann and Krapf, numerous Arabic, Portuguese, and other authorities have been carefully examined. Rabbai M'pia, where these worthy missionaries are stationed, is situated on a ridge of mountains about 25 miles W.N.W. of Mombas. This ridge runs in a N.E. direction, and terminates on the sea-coast close to the point where the river of Killeef was placed in our maps, but which Dr. Krapf ascertained not to be a river, but an arm of the sea extending inland among high mountains to a distance of 25 miles. The air of these mountains is cool and the climate excellent. Mr. Rebmann's first journey extended only to Taita, but his second was carried out to Jagga in its S.W. extremity. Crossing the ridge from Rabbai M'pia, he came, after 30 miles journeying, to the edge of a plain or desert near Endanga. From this place he crossed a plain covered with thorny bushes and with little water, until at the end of 8 days (about 73 miles) he came to Kadiaro, the town of the chief of a portion of the Taita tribes, situated on the S.E. end and side of the range of mountains. These rise abruptly from the plain to a great height. Kadiaro is about 4000 feet above the level of the sea, the climate cool and delightful—every spot cultivated, the sugar cane abundant, and sheep and goats are numerous. The peak of Kadiaro rises to a height of about 2000 feet above that place. The first range runs from S. to N., with numerous springs and many small lakes. The Taita country consists of three great ranges of hills, with many hundreds of villages, and about 150,000 to 160,000 inhabitants. The first range from Kadiaro W. is about 5 miles distant, and is called Lahenga Mahasson; and the third or western range is about 15 miles to the W., or rather to the N. of Kadiaro. The country is divided into three districts, viz., Kadiaro, Endara, and Boora, or Kelim Kobema, the last two districts stretching from S.W. to N.E., about three days journey. On the plain, near the E. side of the Kadiaro range, were found numerous detached rocks, some of them 100 feet high. Mr. Rebmann was well received by the people of Kadiaro.

The Taita mountains stretch northerly to a distance of 40 or 50 miles, where they join a lower range, which passes E.N.E. till it unites with the mountains running to the N.E., immediately behind Mombas, and at the same time with a higher range which runs westward till it joins the snow-covered hills of the W.

In the end of 1847 Mr. Rebmann left Rabbai M'pia to proceed to Jagga, a remarkable country situated to the westward, or rather N.W. by W. of Taita, and on the direct road to the Great

Lake. He pursued the road to Taita, and passing Kiadiaro bent his way to the W.N.W., as he passed through the southern parts of Boora. From Kadiaro to the confines of Jagga is seven or eight days' journey over ridges, and one plain of two days' journey without water. From the Boora district Mr. Rebmann first saw the great mountain of *Kilimandj-aro*, covered with perpetual snow, and then five days' journey to the west. The ridges in this part run from S. to N. He stopped some days at Masagnote, whence Kilimandj-aro is visible. Leaving Masagnote, he crossed the river Gnaro, the receptacle of all the waters of Boora, which river turns to the east and runs to the Pangany, being joined a little to the south by the Madadi, from 3 to 4 yards broad. Two days from the Gnaro he crossed the Lami, 1 foot deep and from 10 to 12 broad. As he approached Jagga the country became fine and covered with trees. Soon after he crossed the Gana, 3 feet deep by 30 to 40 broad, a rapid stream, the water of which was very cold, the stream descending from the eastern side of the snow-clad range. Crossing the river, he entered the kingdom of Kislema. The Gana joins the Lami, and these united form the head waters of the Pangany, or Fangany as the Arabs pronounce it. To the N. was the Kiskambutia mountain, E. of Kilimandj-aro, which former mountain forms the boundary of the Wakamba country. In his next journey Mr. Rebmann proceeded still further W. From Kislema to Mambkunga is 10 miles, at which place the peak of Kilimandj-aro bears N.W. Next day he went to Madjame, where he slept, then about 6 miles from the mountain. Pursuing his journey through a country intersected with valleys from 1500 to 2000 feet deep, he crossed in a day and a half's journey, between Kislema and Madjame, twelve streams, one of which was only 5 inches deep and 5 yards broad. Here, in the province of Uru, or Oroo, the mountain was about 6 miles distant. Eastward, and distant 10 or 12 miles, was *Mount Shuru*, sometimes covered with snow. On the 6th of January, after a journey of 15 miles through a very rugged country, he came to the Weriwarie, 1½ foot deep and 14 yards broad, forming the eastern frontier of the state of Madjame, to the chief of which he was bound. Here Kilimandj-aro was only about 3½ miles distant. The state of Madjame extends three days' journey E. to W., and 10 or 12 miles from S. to N. and is bounded to the N. and N.E. by the snow-clad mountain of Kilimandj-aro, or, 'the Mountain of Greatness.'

Mr. Rebmann clearly intimates that a considerable portion of its height was covered with perpetual snow. In this latitude the line of perpetual congelation is at least 17,000 feet above the level of the sea, so that its height probably exceeds 20,000 feet. Many streams descend from the snow (called *Kibo* in the language of Jagga) to the W., in which direction, and at no great distance,

there is in the country of Handu or Hendrui a lake called *Ro*, which in the rainy season and from the melting of the snow becomes very large, when the surf on its shores is very rough. During the dry season it almost vanishes, and the land around its banks becomes encrusted with salt, which forms a considerable article of commerce for the natives with the neighbouring tribes. It is in a country called *Djadjo* or *Jajo*, from which Kilimandj-aro is still visible. From salt being found on its shores it is clear that it has no outlet, nor can it be the source of any fresh water river, though it is certainly the receptacle of one, and probably that one which rises near the equator to the south of the sources of the western branch of the Nile. The streams descending from Kilimandj-aro run to the S., and from its northern side others descend to the N. and N.E.

This mountain is about 180 geographical miles nearly W. or W. by N. $\frac{1}{2}$ N. from Mombas, and consequently in about $36^{\circ} 38'$ E. long., and $3^{\circ} 20'$ S. lat. The northern extremity of the Taita hills rise to a great height, and next in height to Kilimandj-aro, and 12 miles N.E. is Mount Shuru (the Djulu of Krapf), but without perpetual snow. The cold upon the Taita hills is, however, very severe, as was found by a party from Mombas, who, going to invade some of the Jagga tribes situated beyond them, were compelled to retreat, and being attacked by the people on the summit of this range, were routed, the cold being so intense that their benumbed hands could not use their fire-arms.

Near, and to the N.W. of Kilimandj-aro is another lake called *Lucajo*, formed by the melting of the snow; and not far from the lake, N. to N.W., is the tribe of Wabehkimo, literally, 'the small race,' their stature being only twice the length of the arm from the elbow to the tip of the middle finger. Beyond the chain, of which Kilimandj-aro is the chief, is the powerful tribe of Wakamba and more to the W. a portion of the Ukuafi.

The Wakamba live around the river *Adi*, which is not passable during the rains. The Ukuafi are a wild fierce people, who have neither houses nor huts, and subsist upon milk and meat. They dwell near a river, which is so large that they cannot cross it; and the western portion of the tribe make frequent attempts to cut off the communication of the Wakambas with Jagga. They do not bury their dead, but throw them away, to decay or to be devoured by wild beasts. The great river mentioned is no doubt the Sabake, hitherto considered as the Quillimancy.

Mr. Rebmann gives a route from Madjame, by Wanderebo and Uniambe to Ugago or Ugogo, of twelve days' journey, which latter country is next to and near the Monomoises, a *people*, not a *place*, and which name he says comprehends an immense track of Central Africa. From the eastern borders of their country it is fifteen days' journey to the lake, through a nearly level country. Dr.

Krapf says, that from Jagga to the lake is from 150 to 200 hours' travel. Hours is an Arab mode of computation, and each hour is equal to about $1\frac{1}{2}$ or $1\frac{3}{4}$ geographical miles, and taking the medium, 175 hours is 300 miles, which is rather more than can be accomplished by common caravans in thirty days' journey; but computing it at 165 hours, it would, when compared with other more specific accounts, be tolerably correct. The capital of the Monomoises is called Usambara, and its powerful chief Libun. From Usam-bere is probably derived the well-known name and lake Zambre.

Dr. Krapf gives many interesting particulars of eastern Africa in general, and of that portion of it situated between Mombas and the Pangany river, which he had visited by land, and also by sea along the coast. To the N. of the Pangany the country is hilly and rugged in the extreme; the mountains rising in some places to the height of 6000 feet above the level of the sea, steep and rugged with narrow fertile valleys. The most important portion of this hilly country is called Usambara, and the capital is about three days' journey from the mouth of the Pangany. The coast to the N. of Pangany is bold and rugged, and bears the strongest marks of having, in early times, been torn by terrible convulsions of nature. The Pangany Dr. Krapf found to be about 150 yards broad; a deep and rapid stream descending from the mountainous country just alluded to. Its mouth is in $5^{\circ} 30' S$. The town or village of Pangany is on the N., and the town Boannee on the S. bank. From this last mentioned place the caravans start to proceed to the great interior lake to the W.; the first part of the journey bending a little southerly to avoid the precipitous hills through which the Pangany flows. This is important to know, because the starting point has hitherto been stated, although from this town, to be on the coast almost S.W. of Zanzibar, which, if considered to be the starting point, would make a serious difference in the position of the lake. What Dr. Krapf states is confirmed to me by other authorities, and especially by an itinerary which I presented in 1845 to this Society, and which is one of the most correct that ever came in my way. According to this the distance from the sea to the lake is sixty-two days' actual travelling, and Prince Hillwal, the son of the Inaum of Muscat, who was in this country a few years ago, confirmed this statement. Dr. Krapf was told repeatedly that it was sixty days' or two months west from Mombas, and in the country of Usambara he met a man who had been at it, and said that from Usambara the distance was fifty days' journey, the road lying through different tribes, the names of several corresponding with those given by different authorities, more especially by one transmitted to the United States by the American consul at Zanzibar, and published some years ago in those States.

The position of this lake should therefore be in about $4^{\circ} 30' S.$ lat., and 31° to 32° E. long.; but allowing 8 geographical miles for the day's journey, which I think may properly be done, the true position will be in 31° E. long. The route from Jagga passes more to the N. than the route from Boannee. Where the latter reaches it towards its southern extremity it is described to be in breadth equal to the distance from Zanzibar by sea to the African coast, or about 24 miles; but it appears that it spreads out greatly to the N.W., though I suspect its reported breadth in that part arises from the expansion of the river coming from the N.W., as travellers say there are numerous islands in it, on one of which they rested each night as they proceeded through it, during the space of eight days. Two Portuguese missionaries, who had reached it from the S., state that two large rivers run into it from the W., by which they conceived the Portuguese from the E. coast might reach their possessions in Benguela and Angola. It goes by different names, Taganika, Zarahwah, and Bahar Safe,* the latter name heard by Dr. Krapf, being probably a corruption of the name Luffia or Roofoo, *the great river which runs through it*. The land is very flat on both sides of the lake, especially for nearly fifteen days' journey to the E. of it. Dr. Krapf heard the customary African reports, that while one river flowed from it to the Indian Ocean, another ran from it to the W. or N.W.; which latter he considered might be the Congo, by which he thought he could, in the journey he contemplated across the continent, reach the Atlantic.

We have had so much experience of this mode of reversing the course of rivers by native Africans, that we can have no difficulty in seeing the error. The river running from the lake in the direction of the Congo is in reality a river flowing from the centre of Africa into the lake. Dr. Krapf heard of the great river "Roofoo" in the interior, abounding with islands. In this we recognise the Luffia (the letters L and R being readily changed in Africa), which is the Rofoe crossed, in $3^{\circ} 22' S.$ lat., and $26^{\circ} 18' E.$ long., by Pedro, the Portuguese traveller, whose routes through the central parts of the continent are generally accurate and interesting. Dr. Krapf had also heard of a great river, that from the interior (700 miles from Mombas) ran to the Western Ocean; which is probably the Coango in its early course. He also maintains that white men came from the W. coast to the great lake.

One nation deserves particular mention, namely, the Wakamba, a great people (not negroes), who spread from the N. of Kilimandjaro along a great river northwards to the parent stream of the Ozee. These Wakambas hold communication with the Goida negroes,

* Lake N'yassi is fifteen days' journey (say 150 miles) due W. of Quiloa.

and, first crossing a great river (the Dana?), travel up a river (the Maro, or Pokomoni?) northwards till they reach the country where Christians are found (Kaffa and Enarea), from which people in the dress and of the colour of Arabs come to trade. Immediately beyond the Wakamba, to the N.E., are the Gallas, who, though a superior race of men, are from their warlike habits the scourge of Eastern Africa. Some of the Wakambas are, as Dr. Krapf was told, very fair, and Bruce has stated the same. That there are white people in the interior of Africa has often been asserted. Prince Hillwal assured me that they were now but a small community, and that their place of residence in the interior was about 15 days' journey from the western boundary of his father's territory; they lived on a mountain near a river, carefully guarded, especially during the night, when the gates were shut and secured. Whence have they come?

Dr. Krapf states that the country to the N. of the Taita range becomes open, and that villages beyond it can be seen to a great distance. At a month's journey in that direction is a country (Ukumbani?) surrounded by a river, to which people from the N., in the Arabic dress, and speaking the Arabic language, come after a journey of two months to trade. This indefatigable missionary visited every part of the Bay of Formosa, and the mouths of the rivers to Patta and Lamoo. He says all these rivers join in the Delta, and come from two great streams; one descending from the unknown countries of the W., and the other, the Ozee, from one great river flowing from the N.W., but communicating not far from the coast with the western stream. He found the Ozee ebb and narrow at its mouth (a proof that it shifts from the floods and the surfs), but inland it is very deep. It comes from the great river called Pokomoni, from the name of a tribe and a great chief on its banks. It is identical with Captain Owen's Pokemasa. The Gallas call this river the Maro, and the Sowaheles call it the Yamba. On the upper part of the Maro there is a tribe called Kaffiro, who are very fair, and who bring down Arabian articles for sale. These names may be recognised as the Maro or Malo of Sir William Harris and others, and the Yamba of Mr. d'Abaddie, who maintains, as I think, the erroneous opinion that the Gojob joins the White Nile in the country of Yamba. It is the great river of the Portuguese called "Obü," a corruption of the name "Omoo," by which it is known in its early course. Dr. Krapf heard the customary African stories about the Gojob, the Jub, the Ozee, the Pokomoni, Pangany, and Luffia, &c., being the same river, or coming from the same river, which communicated with the White Nile; all of which reports mean simply that these rivers take their rise nearly in the same high districts of Central Africa.

When once over the bar, the Ozee, or Pokomoni, becomes broad, and deep enough for large ships. I am informed that, at the distance of about 60 miles from the sea, it is joined by a large river from the N.W. Dr. Krapf says the Pokomonis understand the Galla language, and supply the great Gallas with rice, maize, &c. He also gives the names of many considerable Pokomoni towns, extending along the banks of the river to a distance of 12 days' journey. At Killangore, one of these, Musa, a great Pokomoni chief, has his residence. He is frequently attacked by the Gallas, and also by a portion of the Ukuafi tribe, residing near him. Two other divisions of this barbarous people dwell, one to the N. of Taita, and the other to the N. or N.N.W. of Jagga. A native told him that the entrance to the middle branch of the Pokomoni, at or near Emtotama, resembled the entrance into Surat, where he had been. The natives do not row their boats on the Pokomoni on account of the rapidity of the stream, but move them by means of poles, which they strike into the banks. There are no dangerous fevers around these rivers, and Dr. Krapf was told that the climate was generally healthy.

The length and size of African rivers are not to be judged by their outlets, because in almost every portion of that continent they are blocked up with bars of sand and stones thrown up by the joint action of the river and the ocean. Through and in these banks of stones, sand, and gravel, the water of the rivers sinks underground, as it were, and finds an outlet. Many African rivers flow through vast table lands, where they not only receive few affluents, but where the evaporation of a tropical climate diminishes in a great measure their volume; hence the discrepancy between their magnitude in the interior and their outlet into the ocean. This is particularly the case with the rivers on the eastern and south-western coast.

Dr. Krapf describes with great feeling the ruins of the ancient town of Melinda, situated near the bank of the river, and at a short distance from the bay and De Gama's pillar. It must, at one time, have been a very important place. Many of the houses stand yet in streets of great length, but the doors and windows are all gone, the walls going rapidly to decay, and becoming covered with bushes. The water, to the edge of which had been a wharf of great extent, was 30 feet deep. It had been ruined by the Gallas and other savage tribes after the decline of the Arab and Portuguese power. The river at this place is either the Sabake or a branch of it, that is, the river (Gelana Sabake) which comes from the W. to join the Pokomoni or Ozee (Gelana being the Galla word for river, or river of the woods or desert). In extracts from Torre Tombo, or the public records of Portugal, it is stated, that in the days of their African strength the Portu-

guese navigated this river to a distance of 17 days' journey. This is the river which has been called Quillimancy, but Dr. Krapf says that there is no such name to any of the rivers in the bay of Formosa, but that the error has arisen from the Arabic word Keoomancy, Kilima-dá Mansi according to Rebmann, the name of a great coral reef, which extends itself opposite the mouth of one of the branches entering the bay of Formosa. This river, I consider, comes from, or is formed by, those streams which rise in the centre of Africa about the equator, and to the S. of the sources of the eastern branch of the White Nile.

Besides the river Sabake, Dr. Krapf mentions smaller streams which descend in a north-easterly direction from the boundary of the Taita range, and especially one, called the Karanghe, or rather Tzavo, which comes from the great chain to the N. of Kilimandj-aro. He also states that there is a fine harbour about 40 miles to the S. of the mouth of the Jub, called Keeama, but the entrance has too little water for vessels of large burthen. He speaks in raptures of the excellence of the climate in those parts, especially about Tanga and the Pangany.

Much time has been wasted by parties anxious to prove the Gojob of Kaffa to be the parent stream of the White Nile; and though Bruce adopts this theory, on the other hand he tells us* that he was informed by excellent authority at Gondar that the Kibbee of Kaffa (certainly the Gojob) bent its course to the S. and S.E., and entered the Indian Ocean near Melinda. That it did so was no doubt one of the reasons, perhaps the main reason, why Fernandez and his companions were sent from Abyssinia by Enarea that way to the sea and the Portuguese settlement at Melinda, in order to have water conveyance a part of the way. The distance from the capital of Enarea to Melinda was then estimated at 35 days' journey. In the map accompanying the quarto edition of Bruce's Travels, we find the course of the Kibbee so laid down, and issuing from the sources as stated by Mr. d'Abaddie. It is denominated the Zebee or Quillimancy in the map alluded to, while the Jub, a separate river, is called the Acco, famous in the Abyssinian wars of the African Mahomedans.

In the sketch map which accompanied this paper the extreme sources of the eastern branches of the White Nile were laid down in $0^{\circ} 30' N.$ lat. and $34^{\circ} 30' E.$ long. The first Egyptian expedition (1839-1840) left this river, in $10^{\circ} 22' N.$ lat. and $31^{\circ} 45' E.$ long., descending from the S.E., and said to be from a lake. This branch was then (27th January) 1390 feet broad, about 3 feet deep, and subsiding fast from the effects of the dry season. Since this paper was written, Dr. Krapf has visited England.

* Vol. iii. p. 331, 8vo. edition.

Besides his Journal, I have had personal communication with him regarding his late journey from Mombas to Kitui, the capital of Ukambani. This place is in nearly 1° S. lat. and 37° E. long. The high snow-capped mountain, "Kænia," bore about N.W. by W., the distance about 105 geographical miles, the mountain thus being in $35^{\circ} 20'$ E. long. and $0^{\circ} 20'$ S. lat. From the N.E. portion of this mountain runs the river Dana or Daena, a great tributary of the Ozee or Pokomoni, and other rivers, that enter the sea in the bay of Formosa. The Dana, about 50 miles W.N.W. of Kitui, is, during the dry season, 200 yards broad, 5 feet deep, and its course to the sea is uninterrupted by rocks or rapids. Dr. Krapf was informed that another river rose to the N. side of Kænia, which ran northwards to the country of the White People (the eastern branch probably of the Bahr-el-Abiad). From this point to the place where the Egyptian expedition left it is about 245 geographical miles, furnishing a space sufficient to feed a river of the magnitude already mentioned.

The river Sabake, in its lower course, is formed by the Adi, the Tzavo, and several other streams. The Adi bounds the Wakamba country on the S., and comes from the country of Kikuyu in the S.W. of Mount Kænia. This river (then the dry season) was 170 yards broad, its banks 25 feet high, but at that time the water in the channel was only 60 yards broad and $1\frac{1}{2}$ feet deep. The Tzavo comes from the N.W. base of Kilimandj-aro, and is, where Dr. Krapf crossed it, 24 feet broad and $2\frac{1}{2}$ feet deep. The Dana bounds Ukambani on the N., and receives several rivers from the N. and to the E. of Mount Kænia. Farther N. and N.E. of Ukambani the country becomes very hilly, while Ukambani generally is an elevated plateau, dry and healthy. The distance from Kitui to Mount Kænia was given at 6 days' journey, or rather six halting places; and to Kilimandj-aro it was stated to be 10 days' journey (according to Dr. Krapf 40 hours). This mountain is visible from Kitui. From the bearing which Dr. Krapf saw Mount Kænia take, namely, from E. to N.W. by W., it is obvious that the two snow-clad peaks, which he saw apparently near each other, would still be at a considerable distance from each other. The mountains extending N. from Mount Kænia we know, from other authorities, are very high, and capped with perpetual snow. Appearing just on the range of the horizon, with no hills intervening, it is obvious that Mount Kænia must be at a considerable distance from Kitui. S.W. from the mountain, and in the country of the Kikuyu, is a high volcano in activity. To the W. of it is a country called Muhame, destitute of wood, but of volcanic character. The people of Ukambani are willing to labour for wages, and seem to be without slaves. They are not negroes. Kivoi, the chief of Ukambani, told Dr. Krapf that he had been to a country N.W. of Jagga, where he saw men with tails. Ivory is very abundant in all the adjacent countries.

Dr. Krapf undertook his journey at the close of the dry season, November. He left Kitui on the 4th of December, immediately after which the rainy season commenced, and he found the river Adi a little swollen in consequence, when he passed it on his return. The tropical rainy seasons are sure guides. The theory that the White Nile rises at a considerable distance to the S. of the equator is, by these unerring laws of nature, quickly disposed of. If it did so rise, then the Egyptian expedition would have found the stream not falling but rising in January, and they were told that the river would not begin to rise till the close of March. On the other hand, all the rivers which flow into the bay of Formosa, flooding in February, prove that their sources are all to the S. of the equator; while the Jub and other streams to the N. flooding in June, July, and August, show that their sources are in high lands near Shoa and in Enarea. Martin of Tyre stated that the Nile of Egypt rose under the equator; the priests of the temple of Minerva in Egypt told

Herodotus the same, when they informed him that one-half of the waters of Africa ran to the N. and the other half to the S.; Bruce also maintained that the farthest source of the White Nile was near the equator.

Dr. Krapf mentions a remarkable feature of the country seen on his journey before coming to Tzavo, namely, a hill or bank about 200 feet high, extending from the mountains near Killeef along N. of the Taita mountains to the W., towards the sources of the Adi and the country of Kikuyu. How is this?

Note to p. 241.

Since this paper was written, an account of the journey of Mr. M'Cabe, a trader from Grahamstown to these parts, has come into my hands. From the Mooi river (the *Chanopas* of Harris) he went to Magaliesberg on the Ouri river, and from thence, in eight days, he passed the Cachan mountains, and then the Limpopo, where it struggles through the hilly country. Thence he marched 28 miles N.E., the Mural range being then about 18 miles to the eastward. He reached the river Matlabatze, went down it about 25 miles, then crossed it where it was 20 yards broad, and after a journey of 80 miles (70 geographical), he came to the Umgoolah or Mikolwe (called also the Tlatla), crossed it where it was 80 yards broad, and travelled 35 miles down its right bank to its junction with the Limpopo; say in all 128 geographical miles N. from the passage of the Limpopo in nearly 25° S. lat. Thence he proceeded (by compass it is presumed) E.N.E. to the Pallallah or Liphallala, a broad, clear, and rapid stream. Continuing his course 130 miles (110 geographical), he crossed the Limpopo, 200 yards broad, and running deep. During the first day's march he came to a small tributary, up which he travelled to the close of the day N.W. He then struck off to the N., and on the third day came to the small river *Rakwi*, which joins the Macloueste to the eastward. His guides then took him in one day to the river Macloueste (the Motuiste of Oswell), which he found to be a fine stream 150 yards broad, and running E.N.E. (descending it one day) parallel to the Limpopo, which it joins at a considerable distance to the eastward. This is no doubt the river called Zouga, near to Lake Ngami. On the *Rakwi* he found the tract of Potgeiter's party, who marched that way to attack Moselekatse, dwelling to the N. of the Limpopo, from the *Zautpansberg* (salt-pan hill) situated to the S. of the Limpopo, where this boer chieftain had fixed his residence about 18 years ago. In the lower part of his journey Mr. M'Cabe was obliged occasionally to quit the bank of the river owing to the hilly rugged nature of the country. On the S. side, and somewhere near its junction with the Macloueste, the Limpopo is joined by the Malaquiane (mentioned by Oswell), a very considerable stream which comes from the Mural chain, or, as it is so called by the boers, the Waterberg Mountains, or rather from a range which branches off from them E.N.E., called the *Blaumberg*, joined, it is supposed, to the salt-pan hill.

Mr. M'Cabe has therefore been farther down the Limpopo than any other traveller. He is more clear in his descriptions and course than either Oswell or Cumming, but agrees with them on all the main points where their respective journeys coincide. The direction they and he travelled was E.N.E. in their general course down the river, which, considering the bearing to be by compass, and the variation in these parts last year, 26° W. would carry the course of the Limpopo at Mr. M'Cabe's farthest point E. (its first great eastern turn being in 22° 46' S. lat.) to 23° 10' S. lat., and nearly in 31° E. long., considering Mosega to be in 25° 36' S. lat., and 25° 52' E. long. He states that, at the point where he left it, the Limpopo bent its course more to the E., and the others, from the reports, give it an E.N.N. direction, with very high hills on its southern banks.

By accounts just received from Mr. Livingston, Lake Ngami is the receptacle of the waters from a *larger lake*, about 150 geographical miles to the northward, which contains several islands, on one of which Sebatoane resides. A rapid river, called the Teoge, connects the two, and during the rains this river rolls down large trees and the carcasses of animals. The shores of Lake Ngami are dreadfully unhealthy; the prevailing fever resembling the yellow fever of the West Indies. The inhabitants on the shores of the lake have some knowledge of the Portuguese on the W. coast.

XVII.—*On the Northern Frontier of Nepaul.* From a Member of the Nepaulese Embassy in London. Communicated through the President.

(Read June 10, 1850.)

THE latest editions of maps of India, including those of Keith Johnston, Arrowsmith, and Ritter, agree in their delineation of the northern frontier of Nepaul. This boundary is incorrectly laid down, and should be moved further N., so that the line should leave the boundary (at present laid down) at Gosaentan; from which place, westwards, both slopes of the main line of snowy peaks of the Himālaya belong to the Nepaulese. The boundary then runs along a ridge to the N. of the Himālaya, including Mustang. This place is about 30 miles from the foot of Dhawala-giri, and is much resorted to by pilgrims. From Mustang the line should be continued westwards so as to include the valley of Humla, containing the head waters of the Ghagra which traverses the western portion of Nepaul.

F. Hamilton Buchanan, who was in Nepaul in 1802, says, (p. 272) that “the river Gandaki, rising near a place called Damodur Kund, runs through the territories of a Bhotan chief, called the Mustang Raja, who is, or at least when I saw him in 1802 was tributary to Gürkha; but there is reason to think that since that time the Chinese have compelled the Raja of Gürkha to cede both Mustang and Kurung.”

The district Humla is laid down in Ritter’s map as Yumila; besides there is Jumla, in which is the town Dipal (Yumila and Jumla are the same name, as are Yamuna and Jumna). But are Humla and Jumla distinct, or are they names of the same river-course, pronounced differently in different districts of the Himālaya?

The distance from the Nepaulese and the Tibetan frontier to the Brahmapootra is about 7 kos, or 14 miles. At the place designated, the river is about as wide as the Thames at London, and fordable in some places.*

* For Dr. Gutzlaff’s account of the Nepaulese frontier, see pp. 194–199 and 211.—Ed.